

In the Claims

Claims remaining in the application are as follows:

1. (Currently amended): A tape mirror interface configured for usage in a tape storage system comprising:

- an input terminal coupled to at least one input node and ~~capable of~~ configured for receiving data transfer requests from at least one host external to the tape storage system;
- a plurality of output terminals coupled to a plurality of tape storage devices in the tape storage system; and
- a control element coupled to the input terminal and plurality of output terminals, the control element presenting for host logical access at least two associated mirror devices of the plurality of tape storage devices as separate media devices and selectively controlling data transfer in the at least two associated mirror devices in a synchronous mode so that writes to a logical target tape storage media directed to the tape mirror interface are mirrored to a mirrored tape storage media and in a split mode so that writes to logical target tape storage media directed to selected tape storage devices are written to the tape storage devices independently without mirroring.

2. (Currently amended): The tape mirror interface according to claim 1 wherein: the control element responds to a SYNC command directed to the tape mirror interface accesses the at least two associated mirror devices by synchronously writing data to a primary tape storage device and to a secondary tape storage device with data discrepancies between the primary tape storage device and the secondary tape storage device ~~being~~ preserved.

3. (Previously Presented): The tape mirror interface according to claim 1 wherein: the control element responds to a SPLIT command directed to the at least two associated mirror devices by enabling writing to a primary tape storage device and to a secondary tape storage device separately without mirroring.

4. (Original): The tape mirror interface according to claim 1 wherein:

the control element is implemented in a software Application Programming Interface (API) executable on an external host computer.

5. (Original): The tape mirror interface according to claim 1 wherein:
the control element is implemented in a hardware Small Computer Systems Interface (SCSI) Logical Unit (LUN) enabling mirror configuration commands to be transferred as SCSI commands.

6. (Original): The tape mirror interface according to claim 1 wherein:
the control element is implemented in a hardware out-of-band management interface.

7. (Original): The tape mirror interface according to claim 1 wherein:
the control element is implemented in a hardware Local Area Network (LAN) based control interface using a Transmission Control Protocol/Internet Protocol (TCP/IP) management protocol.

8-11. (Canceled)

12. (Currently amended): A command interface controller for usage in a tape storage array comprising:
a command interpreter capable of identifying at least one interface command; and
a control element responsive to the identified at least one interface command and selectively controlling data transfer in a synchronous mode so that writes to a target tape storage media are received by a mirror interface as a logical target and mirrored to a mirrored tape storage media in the tape storage array and in a split mode so that writes are written to the target tape storage media as logical targets and the mirrored tape storage media independently without mirroring.

13. (Currently amended): The command interface according to claim 12 wherein:
the control element presents for logical access a plurality of tape storage devices and corresponding media in the tape storage array to ~~an~~ a host device external ~~device to the tape storage array~~ that issues commands as to separate and

individual tape storage devices and media.

14. (Original): The command interface according to claim 12 wherein:
the command interpreter identifies a MODE command; and
the control element responds to the MODE command by designating whether
the command interface controller supports tape mirror functionality
and whether tape mirror functionality is enabled or disabled.

15. (Original): The command interface according to claim 12 wherein:
the command interpreter identifies a SYNC command; and
the control element responds to the SYNC command by enabling mirror functionality
and synchronously writing data to a primary tape storage device and to a
secondary tape storage device with data discrepancies between the primary
tape storage device and the secondary tape storage device being preserved.

16. (Original): The command interface according to claim 12 wherein:
the command interpreter identifies a SYNC command; and
the control element responds to the SYNC command by determining whether less
than two tape storage devices are coupled to the command interface and, if so,
returning an error message.

17. (Previously Presented): The command interface according to claim 12 wherein:
the command interpreter identifies a SPLIT command; and
the control element responds to the SPLIT command by disabling mirror
functionality and writing to a primary tape storage device and to a secondary
tape storage device separately without mirroring.

18-39. (Canceled)

40. (Currently amended): An article of manufacture comprising:
a controller usable medium having a computable readable program code embodied
therein for executing in a command interface controller for usage in a tape
storage array, the computable readable program code further comprising:

a computable readable program code capable of causing the controller to identify at least one interface command; and

a computable readable program code capable of causing the controller to respond to the identified at least one interface command and selectively control data transfer in a synchronous mode so that writes to a target tape storage media are received by a mirror interface as a logical target and mirrored to a mirrored tape storage media in the tape storage array and in a split mode so that writes are written to the target tape storage media as logical targets and the mirrored tape storage media independently without mirroring.

41. (Original): The article of manufacture according to claim 40 wherein the computable readable program code further comprises:

a computable readable program code capable of causing the controller to identify a MODE command; and

a computable readable program code capable of causing the controller to respond to the MODE command by designating whether the command interface supports tape mirror functionality and whether tape mirror functionality is enabled or disabled.

42. (Original): The article of manufacture according to claim 40 wherein the computable readable program code further comprises:

a computable readable program code capable of causing the controller to identify a SYNC command; and

a computable readable program code capable of causing the controller to respond to the SYNC command by enabling mirror functionality and synchronously writing data to a primary tape storage device and to a secondary tape storage device with data discrepancies between the primary tape storage device and the secondary tape storage device being preserved.

43. (Original): The article of manufacture according to claim 40 wherein the computable readable program code further comprises:

a computable readable program code capable of causing the controller to identify a SYNC command; and

a computable readable program code capable of causing the controller to respond to the SYNC command by determining whether less than two tape storage devices are coupled to the command interface and, if so, returning an error message.

44. (Original): The article of manufacture according to claim 40 wherein the computable readable program code further comprises:

a computable readable program code capable of causing the controller to identify a SPLIT command; and

a computable readable program code capable of causing the controller to respond to the SPLIT command by disabling mirror functionality and writing to a primary tape storage device and to a secondary tape storage device separately without mirroring.

45. (Currently amended): A data protection system capable of storing data on a plurality of tape drives in a tape storage system comprising:

an interface ~~capable of~~ in the tape storage system configured for transferring data from at least one data source external to the tape storage system to the plurality of tape drives in the tape storage system;

a data mover coupled to the interface ~~and capable of~~ configured for moving data from source to destination, bypassing intermediate system elements; and

a tape mirror coupled to the interface and coupled to the data mover, the tape mirror presenting for logical access by a host external to the tape storage system at least two associated mirror tape drives of the plurality of tape drives as separate media devices, receiving data from the data mover, and selectively transferring the data in a synchronous mode so that writes to a logical target tape media of the at least two associated mirror tape drives are directed to the interface and mirrored to a mirrored tape media of the at least two associated mirror tape drives and in a split mode so that writes to logical target tape storage media directed to selected tape drives are written to the at least two associated ~~mirror~~ tape drives independently without mirroring.

46. (Original): The data protection system according to claim 45 further comprising:

a buffer coupled to the data mover and coupled to the tape mirror, the buffer capable of receiving data from the data mover and the mirror and splitting the data into multiple write streams for transfer to a plurality of tape drives.

47. (Original): The data protection system according to claim 45 wherein: the interface is a Fibre-Channel to SCSI bridge; and the data mover is an XCOPY SCSI command.

48. (Original): The data protection system according to claim 45 wherein: the interface is a bridge selected from among a group of bridges comprising: a bridge between external Fibre Channel (FC) hosts and internal Small Computer Systems Interface (SCSI) devices; a bridge between external FC devices and internal FC devices; a bridge between external internet SCSI (iSCSI) devices and internal SCSI devices; a bridge between external internet SCSI (iSCSI) devices and internal FC devices; and a bridge between external iSCSI devices and internal iSCSI devices.

49. (Original): The data protection system according to claim 45 further comprising: a buffer coupled to the interface, the data mover, and the tape mirror; and a control process capable of executing, in at least one control element buffer, a plurality of actions comprising: controlling the interface to read data from a data source into the buffer using data mover functionality; controlling the data mover to detect whether the tape mirror is enabled; controlling the tape mirror, if enabled, to generate duplicate writes to at least two tape drives attached to the interface from the buffer.

50. (Currently amended): A data protection system for usage in a tape storage array comprising:
means for identifying at least one interface command; and
means responsive to the identified at least one interface command for selectively controlling data transfer in at least two associated mirror tape storage media in a synchronous mode so that writes to a target tape storage media of the at least two associated mirror tap storage media are received by a mirror

interface as a logical target and mirrored to a mirrored tape storage media of the at least two associated mirror tap storage media in the tape storage array and in a split mode so that writes are written to the target tape storage media as logical targets and the mirrored tape storage media independently without mirroring.

51. (New) The tape mirror interface according to Claim 1 further comprising: the control element configured to present the selected individual tape storage devices as separate logical units (LUNs) for accessing in the split mode, and configured to present the tape mirror interface as a single logical unit (LUN) for mirror access to a plurality of tape storage devices in the synchronous mode.

52. (New): The command interface according to claim 12 wherein: the control element configured to present selected individual tape storage devices as separate logical units (LUNs) for accessing in the split mode, and configured to present the tape mirror interface as a single logical unit (LUN) for mirror access to a plurality of tape storage devices in the synchronous mode.